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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
PATEL, GAUTAM

ART UNIT	PAPER NUMBER
2655	10

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/603,204	Lee et al.
Examiner	**Art Unit**
Gautam R. Patel	2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Sep 26, 2002* .

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *9-17, 29-40, and 49-63* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *9-17, 29-40, and 49-63* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Response to Amendment

1. This is in response to amendment filed on 9-26-02 (Paper # 9).

2. Claims 9-17, 29-40 and 49-63 remain for examination. Claims 58-63 are newly presented for examination. Claims 1-8, 18-28 and 41-48 are canceled.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 9-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eastman in view of Kume, US. patent 6,072,762 (hereafter Kume).

As to claim 9, Eastman discloses the invention as claimed [see Figs. 1-6] including detecting defocus and compensating a recording signal, comprising the steps of:

detecting the defocus of the optical recording medium [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66]; and

compensating a recording signal with respect to the detected defocus using a predetermined scheme [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66];

Eastman discloses a system that provides improved laser power control in high frequency systems [col. 2, lines 43-50; Eastman]. Eastman does not specifically disclose that the frequency can be as high as provided by short wavelength such as 430 nm or less [lesser the wavelength, higher the frequency]. However Kume clearly discloses a system that which uses a light beam having a wavelength of roughly 430 nm or less [actually Kume discloses 400 nm or less] [col. 3, lines 55-58]. Both Eastman and Kume are interested in adjusting the power level of laser with pulse width thus correcting for defocus or avoiding defocus. One of ordinary skill in the art would have realized that as frequency goes higher or wavelength gets shorter and more data can be recorded in the same amount of space. And as space on the disc is at premium it would have been advantageous to use shorter wavelength diode for high density recording. One of ordinary skill in the art at the time of invention would have used the shorter wavelength diode of Kume in the system of Eastman, because it would have made system of Eastman far more effective and useful for high density recording as disclosed by Kume [col. 7, lines 41-52].

5. As to claim 10, Eastman discloses:

the predetermined scheme comprises adjusting a power level required for recording the recording signal [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66].

6. Claims 11-13, 51-53, 57 and 62 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eastman and further in view of Maeda, US. patent 6,381,206 (hereafter Maeda).

As to claim 11, Eastman discloses:

detecting the defocus of the optical recording medium;

detecting the tilt of the recording medium [col. 3, lines 8-21] of the optical recording medium [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66];

compensating a write pulse with respect to the detected defocus using a predetermined scheme, wherein the write pulse comprises a predetermined recording pattern [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66];

Eastman discloses all of the above elements including detecting defocus and tilt of the recording medium and compensating a write pulse as shown above. Eastman does not specifically disclose well known details of tilt compensation apparatus and method associated with tilt compensation such as compensating a write time of the write pulse with respect to the detected tilt. However Maeda clearly discloses:

compensating a write time of the write pulse with respect to the detected tilt [col. 5, line 57 to col. 6, line 11; Maeda]. Eastman and Maeda are interested in recording and reading information to and from an optical disc in most efficient way. It would have been obvious to a person of ordinary skill in the art at the time invention was made to have provided the data processing system of Eastman's with details of tilt detection and compensation scheme as taught by Maeda, because doing so would have provided mechanism for tilt correction which is vital and necessary part of video recording and controlling the laser power in presence of system degradation such as defocus and tilt [see col. 3, lines 11-20; Eastman].

7. As to claim 12, Eastman discloses:

the predetermined scheme comprises adjusting a power level with respect to the detected defocus [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66].

8. As to claim 13, Maeda discloses:

compensating the write pulse with respect to the detected tilt further comprises:

shifting the recording pattern with respect to the detected tilt by both an amount that the recording pattern was shifted due to the detected tilt, and in a direction opposite

to the direction that the recording pattern was shifted due to the detected tilt [col. 5, line 57 to col. 6, line 11]; and

adjusting a power and the write time required for recording with respect to the detected tilt in order to compensate for a size of a recording mark corresponding to the recording signal [col. 10, lines 9-31].

9. As to claims 51-53 they are claims corresponding to claims 11-13 respectively and they are therefore rejected for the same reasons set forth in the rejection of claims 11-13 respectively, supra.

10. As to claim 57, it is rejected for the same reasons set forth in the rejection of claim 29, supra.

11. As to claim 62 Maeda discloses:

adjusting a write time required for recording the write pulse [col. 5, line 57 to col. 6, line 11 and col. 10, lines 9-31].

12. Claims 29-35, 37-38, 49-50 and 60 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eastman, and further in view of Shoji et al. (US. patent 6,175,541) (hereafter Shoji).

As to claim 29 Eastman discloses

a tilt and/or defocus detector which detects the tilt and/or the defocus of the optical recording medium; and

a recording compensator which compensates a recording pulse with respect to the detected tilt and defocus [col. 3, lines 14-17] using a predetermined scheme [col. 4, line 64 to col. 5, line 11];

wherein the recording pulse comprises a predetermined recording pattern [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66];

As to claim 29 Eastman discloses all of the above steps. Eastman does not specifically disclose details of adjusting the write time to compensate the width of the mark and adjusting the end of first pulse or start of last pulse as claimed. However Shoji clearly discloses:

adjust a length and a width of a recording mark according to the detected tilt and/or defocus [col. 2, line 66 to col. 3, line 45 and col. 4, lines 3-20; Shoji].

One skilled in the art would have clearly recognized that the device of Eastman would have been sensitive to degradation such as tilt and defocus [as disclosed by Eastman, see col. 3, lines 8-21] and that any tilt and defocus nit compensated would have compromised the quality of the electrical signal. Eastman does not teach details of the pulse train that are necessary for compensating these defocus and tilt errors as claimed. Shoji teaches that adjustment pulses is well known to improve quality of the signal by adjusting the power, which comprises adjusting a write power to compensate a length of the recording mark.

Therefore, it would have been obvious to have used a pulse train compensation method in system of Eastman as taught by Shoji in order to control the tilt and defocus in optimum fashion by controlling the start and end edge of the pulses for high density recording [col. 2, lines 50-64; Shoji].

13. As to claim 30, Eastman discloses:

according to the predetermined scheme, said recording compensator adjusts a power level required for recording the recording pulse with respect to the detected defocus [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66].

14. As to claim 31, Eastman discloses:

according to the predetermined scheme, said recording compensator adjusts a power and a time required [when power is adjusted, time inherently gets adjusted because time adjustment changes the power] for recording the recording pulse with respect to the detected tilt [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66].

15. As to claim 32, Shoji discloses:

said recording compensator adjusts a write power with respect to the detected defocus, and generates the recording pulse earlier to compensate for an amount of shift with respect to the detected tilt, and adjusts a power and/or a time of the shifted recording pulse to compensate the length and the width of the recording mark [col. 2, line 66 to col. 3, line 45 and col. 4, lines 3-20].

16. As to claim 33, Shoji discloses:

said recording compensator adjusts the power required for recording to compensate the length of the recording mark, and adjusts the time required for recording in order to compensate the width of the recording mark [col. 2, line 66 to col. 3, line 67 and col. 4, lines 3-20].

17. As to claim 34, Shoji discloses:

said recording compensator adjusts the power by adjusting a write power to compensate the length of the recording mark, and adjusts the time by adjusting an ending time of a first pulse and/or a starting time of a last pulse to compensate the width of the recording mark [col. 28, lines 29-46].

.18. As to claim 35, Shoji discloses:

said recording compensator both adjusts the power by adjusting a write power to compensate the length of the recording mark, and adjusts a power of a multi-pulse chain of recording pattern to compensate the width of the recording mark [col. 2, line 66 to col. 3, line 67 and col. 4, line 3-20].

19. As to claims 37-38:

Regarding claims 37-38, combination of Eastman and Shoji does not specifically disclose that the numerical aperture is greater than or equal to 0.6 when substrate

thickness is 0.3 mm or higher and numerical aperture is greater than or equal to 0.7 when substrate thickness is .3 mm or lower . Combination of Eastman and Shoji teaches that different wavelength would require different aperture of the lens and hence substrate thickness would also vary accordingly. The limitations in claims 37-38 do not define a patentable distinct invention over that in combination of Eastman and Shoji since both the invention as a whole and combination of Eastman and Shoji are directed to processing the defocus and tilt and adjusting the power accordingly. The degree in which the aperture is adjusted or substrate thickness is selected presents no new or unexpected results, so long as the compensation of the defocus and tilt in a successful way. Therefore, to have different thickness of the substrate which corresponds to different numerical aperture would have been routine experimentation and optimization in the absence of criticality.

20. As to claim 49, it is rejected for the same reasons set forth in the rejection of claim 29, supra.

21. As to claim 50, Eastman discloses:

the predetermined scheme comprises adjusting a power level required for recording the recording signal [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66].

22. As to claim 60, Eastman discloses:

predetermined scheme comprises adjusting a write time required for recording the recording signal [col. 5, lines 12-28 and col. 8, lines 49-66].

23. Claims 14-17, 39-40 and 54-56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eastman and Maeda as applied to claims 11-13 above, and further in view of Shoji et al. (US. patent 6,175,541) (hereafter Shoji).

As to claim 14, combination of Eastman and Maeda discloses all of the above steps. Combination of Eastman and Maeda does not specifically disclose details of adjusting the write time to compensate the width of the mark and adjusting the end of first pulse or start of last pulse as claimed. However Shoji clearly discloses:

adjusting a write power to compensate a length of the recording mark; and

the adjusting the time comprises adjusting a write time to compensate a width of the recording mark [col. 2, line 66 to col. 3, line 67 and col. 4, lines 3-20].

One skilled in the art would have clearly recognized that the device of Eastman and Maeda would have been sensitive to degradation such as tilt and defocus [as disclosed by Eastman, see col. 3, lines 8-21] and that any tilt and defocus nit compensated would have compromised the quality of the electrical signal. Combination of Eastman and Maeda does not teach details of the pulse train that are necessary for compensating these defocus and tilt errors as claimed. Shoji teaches that adjustment pulses is well known to improve quality of the signal by adjusting the power, which comprises adjusting a write power to compensate a length of the recording mark.

Therefore, it would have been obvious to have used a pulse train compensation method in system of Combination of Eastman and Maeda as taught by Shoji in order to control the tilt and defocus in optimum fashion by controlling the start and end edge of the pulses for high density recording [col. 2, lines 50-64; Shoji].

24. As to claim 15, Shoji discloses:

adjusting the recording mark width comprises adjusting an ending time of a first pulse and/or a starting time of a last pulse of the recording pattern [col. 28, lines 29-46].

25. As to claim 16, Shoji discloses:

the adjusting the power comprises adjusting a write power to compensate a length of the recording mark, and

adjusting a write power of a multi-pulse chain of the recording pattern to adjust a width of the recording mark [col. 2, line 66 to col. 3, line 67 and col. 4, line 3-20].

26. As to claim 17, Eastman discloses:

detecting the tilt and the defocus of the optical recording medium [col. 3, lines 8-21]; and

adaptively compensating the recording pattern with respect to the detected tilt and/or defocus using a memory [inherently present], wherein the memory stores data comprising:

a write power to compensate with respect to the detected defocus [col. 2, line 49 to col. 3, line 33 and col. 8, line 49-66];

a power and a time required for recording to compensate for an amount of shift of the recording pattern [col. 1, lines 47-56 and col. 5, lines 12-28];

Combination of Eastman and Maeda discloses all of the above elements. Combination of Eastman and Maeda does not specifically disclose details of adjusting the write time to compensate the width of the mark and adjusting the end of first pulse or start of last pulse as claimed. However Shoji clearly discloses:

adjusting a write power to compensate a length of the recording mark; and

the adjusting the time comprises adjusting a write time to compensate a width of the recording mark [col. 2, line 66 to col. 3, line 67 and col. 4, lines 3-20].

One skilled in the art would have clearly recognized that the device of Eastman and Maeda would have been sensitive to degradation such as tilt and defocus [as disclosed by Eastman, see col. 3, lines 8-21] and that any tilt and defocus nit compensated would have compromised the quality of the electrical signal. Combination of Eastman and Maeda does not teach details of the pulse train that are necessary for compensating these defocus and tilt errors as claimed. Shoji teaches that adjustment pulses is well known to improve quality of the signal by adjusting the power, which comprises adjusting a write power to compensate a length of the recording mark.

Therefore, it would have been obvious to have used a pulse train compensation method in system of Combination of Eastman and Maeda as taught by Shoji in order to

control the tilt and defocus in optimum fashion by controlling the start and end edge of the pulses for high density recording [col. 2, lines 50-64; Shoji].

27. As to claim 39, it is rejected for the same reasons set forth in the rejection of claim 17, supra.

28. As to claim 40, Maeda discloses:

a power and/or time and an amount of shift required for recording to compensate when defocus and tilt occur together; and

power and/or time and an amount of shift required for recording to compensate when defocus or tilt occurs [col. 5, line 57 to col. 6, line 11 and col. 10, lines 9-31].

29. As to claims 54-56 they are claims corresponding to claims 14-16 respectively and they are therefore rejected for the same reasons set forth in the rejection of claims 14-16 respectively, supra.

30. Claims 36 and 61 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eastman in view of Shoji as applied to claims 29, 49 and 57 above and further in view of Kume.

Combination of Eastman and Shoji discloses all of the elements described above, including a system that provides improved laser power control in high frequency systems [col. 2, lines 43-50; Eastman]. Combination of Eastman and Shoji does not specifically disclose that the frequency can be as high as provided by short wavelength such as 430 nm or less [lesser the wavelength, higher the frequency]. However Kume clearly discloses a system for detecting defocus and tilt that uses a light beam having a wavelength of roughly 430 nm or less [actually Kume discloses 400 nm or less] [col. 3, lines 55-58]. All Eastman, Kume and Shoji are interested in adjusting the power level of laser with pulse width thus correcting for defocus or avoiding defocus. One of ordinary

skill in the art would have realized that as frequency goes higher or wavelength gets shorter and more data can be recorded in the same amount of space. And as space on the disc is at premium it would have been advantageous to use shorter wavelength diode for high density recording. One of ordinary skill in the art at the time of invention would have used the shorter wavelength diode of Kume in the system of Eastman and Shoji, because it would have made system of Eastman and Shoji far more effective and useful for high density recording as disclosed by Kume [col. 7, lines 41-52].

31. Claims 58 and 63 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eastman in view of Maeda as applied to claims 11-13 above and further in view of Kume.

Combination of Eastman and Maeda discloses all of the elements described above, including a system that provides improved laser power control in high frequency systems [col. 2, lines 43-50; Eastman]. Combination of Eastman and Maeda does not specifically disclose that the frequency can be as high as provided by short wavelength such as 430 nm or less [lesser the wavelength, higher the frequency]. However Kume clearly discloses a system for detecting defocus and tilt that uses a light beam having a wavelength of roughly 430 nm or less [actually Kume discloses 400 nm or less] [col. 3, lines 55-58]. All Eastman, Kume and Maeda are interested in adjusting the power level of laser with pulse width thus correcting for defocus or avoiding defocus. One of ordinary skill in the art would have realized that as frequency goes higher or wavelength gets shorter and more data can be recorded in the same amount of space. And as space on the disc is at premium it would have been advantageous to use shorter wavelength diode for high density recording. One of ordinary skill in the art at the time of invention would have used the shorter wavelength diode of Kume in the system of Eastman and Maeda, because it would have made system of Eastman and Maeda far more effective and useful for high density recording as disclosed by Kume [col. 7, lines 41-52].

32. Claim 59 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Eastman in view of Maeda and Shoji as applied to claim 17 above and further in view of Kume.

Combination of Eastman, Maeda and Shoji discloses all of the elements described above, including a system that provides improved laser power control in high frequency systems [col. 2, lines 43-50; Eastman]. Combination of Eastman, Maeda and Shoji does not specifically disclose that the frequency can be as high as provided by short wavelength such as 430 nm or less [lesser the wavelength, higher the frequency]. However Kume clearly discloses a system for detecting defocus and tilt that uses a light beam having a wavelength of roughly 430 nm or less [actually Kume discloses 400 nm or less] [col. 3, lines 55-58]. All Eastman, Maeda, Kume and Shoji are interested in adjusting the power level of laser with pulse width thus correcting for defocus or avoiding defocus. One of ordinary skill in the art would have realized that as frequency goes higher or wavelength gets shorter and more data can be recorded in the same amount of space. And as space on the disc is at premium it would have been advantageous to use shorter wavelength diode for high density recording. One of ordinary skill in the art at the time of invention would have used the shorter wavelength diode of Kume in the system of Eastman, Maeda and Shoji, because it would have made system of Eastman, Maeda and Shoji far more effective and useful for high density recording as disclosed by Kume [col. 7, lines 41-52].

Eastman and Shoji were cited as a prior art reference in paper no. 8, mailed 6-26-02.

33. Applicant's arguments with respect to claims 9-17, 29-40 and 49-63 have been considered but are deemed to be moot in view of the new grounds of rejection.

Other prior art cited

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

    a. Kim (US. patent 6,354,034) "Recording medium having substrate with thickness dependent on numerical aperture of objective lens, method of forming the optical medium and recording/reproducing apparatus".

35. Applicant's amendment necessitated the new grounds of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact information

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is (703) 308-7940. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is (703) 872-9314.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (703) 305-4827.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700 or the group Customer Service section whose telephone number is (703) 306-0377.

W. R. YOUNG
PRIMARY EXAMINER

Gautam R. Patel
Patent Examiner
Group Art Unit 2655

October 15, 2002